# CLAIMS

1. Method for carrying out gear shifts of an automatic transmission of a motor vehicle, in particular overlap gear shifts, in which a first shift element formed as a clutch or brake opens and a second shift element formed as a clutch or brake closes during a shifting operation, characterized in that to increase the spontaneity and reduce the gear shift frequency of the automatic transmission, a downshift from a first gear (i1) to a second gear (i2) is interrupted without delay and the first gear (i1) returned to when an interruption criterion is recognized, the said interruption criterion being established if it is recognized that the driver of the motor vehicle has called for an upshift before a current transmission input speed (n_T) deviates from a synchronous speed of the first gear (i1).

2. Method according to the preamble of claim 1, characterized in that a downshift from a first gear (i1) to a second gear (i2) is interrupted without delay and the first gear (i1) returned to when an interruption criterion is recognized, the said interruption criterion being established if it is recognized that the driver of the motor vehicle has called for an upshift before a current transmission input speed (n_T) has deviated by a predefined, speed-related limit value from a synchronous speed of the said first gear (i1).

3. Method according to claim 2, characterized in that the said interruption criterion is only established when a time interval, which begins when the current transmission input speed (n_T) deviates from the synchronous speed of the said first gear (i1), has not yet exceeded a predefined, time-related limit value, and/or when a pressure (p_K1) of the first shift element that is being disengaged has not yet fallen below a predefined, pressure-related limit value.

4. Method according to the preamble of claim 1, characterized in that a downshift from a first gear (i1) to a second gear (i2) is interrupted without delay and the said first gear (i1) returned to when an interruption criterion is recognized, the said interruption criterion being established if it is recognized that the driver of the motor vehicle has called for an upshift before a time interval, which begins

when a current transmission input speed (n_T) deviates from a synchronous speed of the said first gear (i1), has exceeded a predefined, time-related limit value.

5. Method according to claim 4, characterized in that the said interruption criterion is only established if the said current transmission input speed (n_T) has not yet deviated from the synchronous speed of the said first gear (i1) by a predefined, speed-related limit value, and/or if a pressure (p_K1) of the first shift element that is being disengaged has not yet fallen below a predefined, pressure-related limit value.

6. Method according to the preamble of claim 1, characterized in that a downshift from a first gear (i1) to a second gear (i2) is interrupted without delay and the said first gear (i1) returned to when an interruption criterion is recognized, the said interruption criterion being established if it is recognized that the driver of the motor vehicle has called for an upshift before a pressure (p_K1) of the first shift element that is being disengaged has fallen below a predefined, pressure-related limit value.

7. Method according to claim 6, characterized in that the said interruption criterion is only established if a time interval, which begins when the said current transmission input speed (n_T) deviates from the synchronous speed of the said first gear (i1), has not yet exceeded a time-related limit value, and/or if the current transmission input speed (n_T) has not yet deviated from the synchronous speed of the said first gear (i1) by a predefined, speed-related limit value.

8. Method according to any of claims 2 to 7, characterized in that the speed-related limit value and/or the time-related value and/or the pressure-related limit value are specified as a function of current operating parameters of the automatic transmission, in particular as a function of a current torque of a drive engine (1) powering the automatic transmission and/or as a function of a desired performance or accelerator pedal angle (FPW) set by the driver and/or as a function of a current speed or speed difference at the first or second shift element and/or as a function of a vehicle speed and/or as a function of a transmission temperature.

9. Method according to any of claims 2 to 8, characterized in that the speed-related limit value and/or the time-related limit value and/or the pressure-related limit value are specified as a function of a gear shift type of the downshift.

10. Method according to claim 9, characterized in that the speed-related limit value for the interruption of a multiple downshift is higher than the speed-related limit value is for the interruption of a single downshift, or the time-related limit value for the interruption of a multiple downshift is higher than the time-related limit value is for the interruption of a single downshift, or the pressure-related limit value for the interruption of a multiple downshift is lower than the pressure-related limit value is for the interruption of a single downshift.

11. Method according to any of claims 2 to 10, characterized in that the speed-related limit value and/or the time-related limit value and/or the pressure-related limit value is/are specified as a function of a change of the driver's wish, in particular as a function of the speed and/or size of an accelerator pedal angle (FPW) change.

12. Method according to claim 11, characterized in that when the intensity of the driver's wish change is high, the speed-related limit value is higher than it is when the intensity of the driver's wish change is low, or when the intensity of the driver's wish change is high, the time-related limit value is higher than it is when the intensity of the driver's wish change is low, or when the intensity of the driver's wish change is high, the pressure-related limit value is lower than it is when the intensity of the driver's wish change is high.

13. Method according to any of claims 1 to 12, characterized in that when the interruption criterion is fulfilled, the pressure (p_K1) of the first shift element is increased in accordance with a predefined pressure-increase function to an engagement pressure level (p_Kzu) and at the same time a pressure (p_K2) of the second shift element is reduced in accordance with a predefined pressure-reduction function to a disengagement pressure level (p_Kab), such that the said engagement pressure level (p_Kzu) of the first shift element and the said disengagement level (p_Kab) of the second shift element correspond respectively

to an initial pressure level of the first and second shift elements in the first gear (i1) before the beginning of the downshift.

14. Method according to claim 13, characterized in that the predefined pressure-increase function and/or the predefined pressure-reduction function is a ramp function.

15. Method according to claim 13, characterized in that the predefined pressure-increase function and/or the predefined pressure-reduction function is an abrupt pressure change.

16. Method according to claims 13, 14 or 15, characterized in that the disengagement pressure level (p_Kab) of the second shift element is quantitatively at least approximately equal to "zero".

17. Method according to claims 13, 14, or 15, characterized in that the disengagement pressure level (p_Kab) of the second shift element is a pre-filling pressure of the second shift element.

18. Method according to any of claims 1 to 17, characterized in that when a change from thrust to traction or from traction to thrust occurs during the downshift, the interruption criterion is not established until after the passage of a predefined time interval which begins when the thrust-to-traction or traction-to-thrust change takes place.

19. Method according to any of claims 1 to 18, characterized in that at the same moment as the interruption criterion is established, all the control sequences (A_RS) associated with the downshift from the first gear (i1) to the second gear (i2), in particular shift-specific blocking times and a shift-specific engine action, are converted into corresponding control sequences (A_HS) of an upshift from the second gear (i2) to the first gear (i1).